

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of manufacturing an embedded multilevel interconnection, comprising:

(1) a step of forming a hole portion in an insulating layer;

(2) a barrier metal film forming step of forming a barrier metal film mainly made of comprising tantalum and nitrogen in such a manner that the barrier metal film covers at least an inner wall of the hole portion, an element composition ratio (N/Ta) of nitrogen to tantalum contained in the barrier metal film being $0.3 \leq N/Ta \leq 1.5$ or higher but 1.5 or lower;

(3) a removal step of removing an oxide film formed on a surface of the barrier metal film; and

(4) an electroless plating step of immersing the barrier metal film in a plating liquid comprising copper and thereby forming an electroless copper plating film on the barrier metal film.

2. (Currently Amended) The method according to claim 1, wherein the element composition ratio (N/Ta) is $0.3 \leq N/Ta \leq$ or higher but 1.0 or lower.

3. (Currently Amended) The method according to claim 1, wherein ~~the barrier metal film forming step is a plasma nitriding step at which~~act (2) comprises irradiating nitrogen plasma ~~is irradiated~~ upon a surface of a film which is mainly made of tantalum and accordingly nitriding tantalum.

4. (Currently Amended) The method according to claim 1, wherein ~~the removal step is such a step at which~~act (3) comprises removing the oxide film ~~is removed~~ and leaving the barrier metal film ~~is left~~ in such a manner that the barrier metal film entirely covers the inner wall of the hole portion.

5. (Currently Amended) The method according to claim 1, wherein ~~the removal step is such a step at which~~act (3) comprises immersing the barrier metal film ~~is immersed~~ in a solution selected from ~~the~~a group consisting of a mixture of a hydrofluoric acid, and a nitric acid and a ~~diluent of a~~diluted hydrofluoric acid, and wherein the oxide film is selectively removed.

6. (Currently Amended) The method according to claim 1, wherein ~~the electroless plating step is such a step at which~~act (4) comprises immersing the barrier metal film ~~is immersed~~ in a plating liquid which ~~uses~~comprises a glyoxylic acid as a reducer.

7. (Currently Amended) The method according to claims 1, further comprising a step of forming an electrolytic copper plating film on the electroless copper plating film by using the electroless copper plating film as a seed layer.